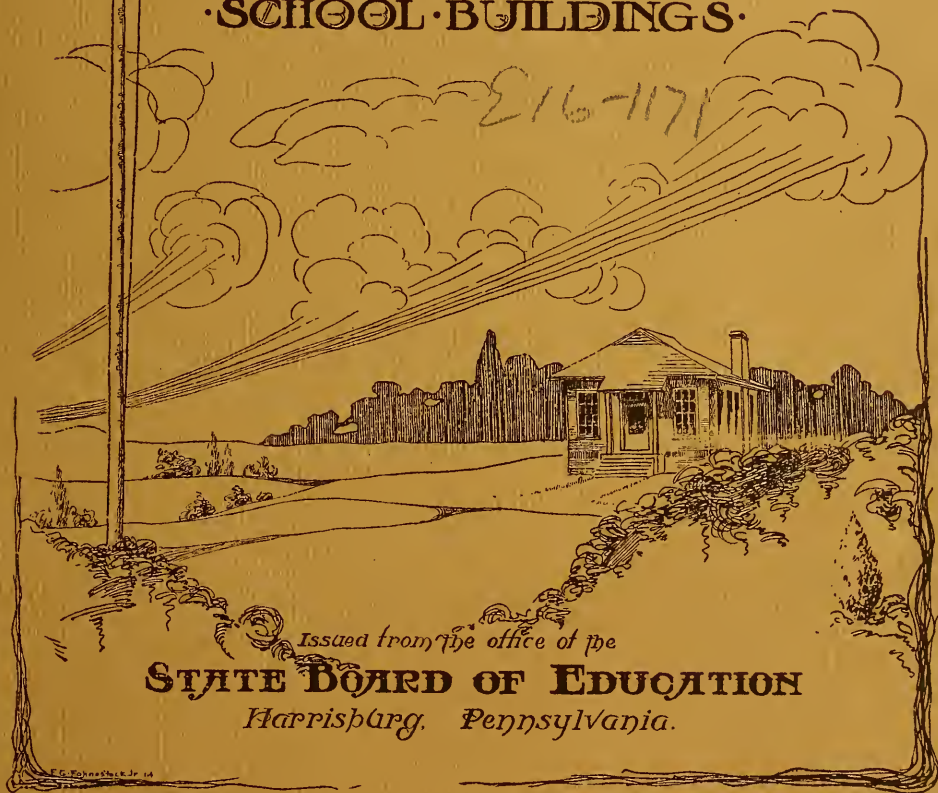


5328
P4 A4

SCHOOL ARCHITECTURE.

·ONE·TWO·
·THREE·AND·
·FOUR·ROOM·
·SCHOOL·BUILDINGS·

216-1171



Issued from the office of the
STATE BOARD OF EDUCATION
Harrisburg, Pennsylvania.

E. C. Foye & Co. Jr. 14

“Who would not rather do one living deed than to have his ashes forever enshrined in ever-burnished gold? Sir, I trust that when we come to act on this question, we shall take lofty ground—look beyond the narrow space which now circumscribes our vision—beyond the passing, fleeting point of time on which we stand—and so cast our votes that the blessing of education shall be conferred on every son of Pennsylvania—shall be carried home to the poorest child of the poorest inhabitant of the meanest hut of your mountains, so that even he may be prepared to act well his part in this land of freedom, and lay on earth a broad and a solid foundation for that enduring knowledge which goes on increasing through increasing eternity.”—From speech of Thaddeus Stevens.

COMMONWEALTH OF PENNSYLVANIA

11

BULLETIN OF
ONE, TWO, THREE AND FOUR ROOM
SCHOOL BUILDINGS

ISSUED BY THE

STATE BOARD OF EDUCATION

MEMBERS OF BOARD

MARTIN G. BRUMBAUGH, PHILADELPHIA	DAVID B. OLIVER, PITTSBURGH
GEORGE M. PHILIPS, WEST CHESTER	JOHN S. RILLING, ERIE
WILLIAM LAUDER, RIDDLERSBURGH	JAMES M. COUGHLIN, WILKES-BARRE
NATHAN C. SCHAEFFER, HARRISBURG	

OFFICERS

NATHAN C. SCHAEFFER, PRESIDENT	H. C. RICHARDS, SUPERVISING ARCHITECT
DAVID B. OLIVER, VICE PRESIDENT	M. I. KAST, ASSISTANT ARCHITECT
J. E. B. CUNNINGHAM, SOLICITOR	

EXECUTIVE SECRETARY

J. GEORGE BECHT, HARRISBURG

CLERKS AND STENOGRAPHERS

EDNA M. KUGLER

FRIEDA MYLECRRAINE

HARRISBURG, PA.:
WM. STANLEY RAY, STATE PRINTER
1915

FOREWORD.

The purpose of this bulletin is to present to boards of directors suggestive standard plans and limited specifications for the construction of one, two, three and four room school buildings. With the present limited organization it is impossible to arrange for the details and specifications of the larger type of new buildings or for the re-arrangement or re-adjustment of old ones. These are still matters for the attention of the local boards. They will employ an architect to prepare the plans and specifications and, after they are thus prepared, will submit them to the Architect of the State Board of Education who will pass upon them. Standard plans supplied by the State Board of Education may be changed to suit local needs but before any legal contract can be made such changes must be submitted to the State Board of Education.

People living in rural and suburban districts are demanding that the school houses shall be made more comfortable and shall be better adapted for good school work. Time is wasted and energy dissipated when school children are crowded in buildings constructed without regard to sanitary and hygienic requirements. The School Code specifically requires that school houses built hereafter must conform to the modern principles of lighting, heating, ventilating and physical activity.

An attractive school house surrounded by large and well-kept school grounds is the best public asset in any community. The day of the barn-like structure is passing rapidly. A substantially built school house designed to meet the needs and purposes of the children, with due regard for modest artistic effects of grace and beauty, will profoundly influence the whole community life. Such a building costs but little, if any, more than the severely plain, uninteresting and uninviting school house of the "olden time."

To aid directors in considering the elementary questions involved in school house construction this bulletin is issued under the direction and by authority of the State Board of Education.

LOCATION AND GROUNDS.

The location and amount of any real estate required by any school district for school purposes is determined by the board of school directors of the district; but the Code makes special provision that hereafter no new school building shall be erected without a proper playground being provided therefor. In this connection, four things ought to be taken into account and carefully considered when a new school house is to be built: (1) size of ground, (2) accessibility of the site, (3) nature of the soil, (4) remoteness from railroads, busy thoroughfares and noisy factories. An acre of ground and more, if possible, ought to be set apart for school purposes. The larger plot will give ample room for recreation and also furnish opportunity for laying out flower beds and school gardens.

Generally, the site ought to be near the center of school population and easily accessible for the greatest number of children; yet this one fact should not out-weight all other consideration. A large area of good, healthful soil away from distracting influences will add materially to the health, comfort and welfare of the pupils and these advantages will more than compensate for the possible inconvenience that some pupils may experience in walking an additional distance.

McC., Dec. 20, 1916

The soil on which the building is to stand ought to be as free from moisture as possible. A marshy school ground is a serious menace to the health of the children. From the view point of good sanitation, a dry, gravelly, sandy soil furnishes the best location. It is worse than a blunder to expose children to the blighting influences of an infected soil. Usually in rural districts and in the villages, the annoyances from thoroughfare and factory are regarded as inconsiderable. Yet even here the rattle of vehicles passing on the highway, the shriek of the train and the whir and rumble of machinery in the nearby mill or factory are very distracting and visibly affect the nervous system of the child.

The beauty and attractiveness of the school ground will be greatly enhanced if trees surround it; and if in addition a neatly trimmed and well-kept hedge encircles it, there will be an effective example to arouse and stimulate the civic and personal pride and the aesthetic sense of the whole community. In almost every part of Pennsylvania the native pine, spruce or hemlock will lend itself to this adornment. The efforts of the pupils may be enlisted in beautifying the school surroundings by giving them an opportunity to assist in planting the trees and hedges and in caring for them. In this way Arbor Days may be given special significance. The best school work can be accomplished where the best physical conditions prevail.

LOCATION ON PLOT.

The selection of the school site is important but not less so is the location and adjustment of the building to the shape and size of the plot. Assuming the area to be one acre, it should measure according to standard form 10 rods by 16 rods with the short side front. Relatively proportionate measurements will obtain when the plot is larger or smaller. It is impossible to lay down hard and fast rules in regard to such matters, since the surroundings vary so widely and these must always be taken into account.

To secure the best light, the windows of the school room ought to face toward the east or west. They may also face toward the south, if by means of proper curtains the direct rays of the sun are softened so that the eyes of the pupils are not dazzled and irritated. Every school room ought to have direct sunlight during some period of the day to keep it healthful and wholesome. Sunlight is the great germ destroyer. An eastern or western exposure gives this for a part of the day but the southern exposure, while giving the full day of sunshine, is sure to affect the eyes of the children, if not properly controlled, because of the bright rays that dazzle and disturb their sight. Even with proper shades or blinds, great care must be exercised in regulating the light coming from a southern exposure.

FLOOR AND AIR SPACE.

The Code requirement is that "every school room shall have not less than fifteen square feet of floor space and not less than two hundred cubic feet of air space per pupil." The size of the room ought to be such as to accommodate approximately 40 pupils in single seats and leave sufficient space for aisles, teacher's desk, reading tables or any other regularly used furniture. A room to fulfill these requirements will measure 24x32x13. A slight variation of these dimensions may be necessary to suit local conditions. These measurements conform to the "normal requirements for vision, hearing and depth to which light will carry." Pupils of normal hearing

sitting in the rear part of the room will be able to hear distinctly the teacher who speaks in moderately forceful natural tones. This is of great advantage to teacher and pupil. It relieves both of strain and fatigue.

In considering the floor space of a building, the matter of cloak rooms, vestibules, library and fuel room ought to receive careful attention. These are essential elements in the planning of any school building of whatever size or material. Separate cloak rooms for boys and girls should be arranged. They should be provided with hooks for the hats, cloaks and coats, and shelves for the dinner baskets. The doors of the cloak rooms should open into the main room. To have them open only into the vestibule adds considerably to the problem of discipline. It is especially important to keep the cloak rooms in a sanitary condition. To that end ample light and ventilation should be provided.

A small room for library and storage purposes has come to be one of the most useful agencies of the rural school. With very little additional expense such a room may be provided with books, book cases, reference works, a table and a few chairs. This will give a place for the older pupils to study when they have special work to prepare. The library room is an indispensable part of the modern country school house. A fuel room or fuel basement should also be included in the plans. It will cost less than a separate coal house and will add greatly to the convenience of the school plant.

LIGHT.

Special attention is called to the requirements of the Code governing the question of light area and floor space. "In every school room the total light area must equal at least twenty per centum of the floor space, and the light shall not be admitted from the front of the seated pupils." The best light is obtained when the windows are placed on the left side of the room only and toward the rear. By this arrangement cross lights are prevented and the eyes of the pupils are relieved from the necessity of continual readjustment to the unequal sources of light. Windows should be placed as near together as possible and thus avoid the shadows thrown by intervening wall space. Unfortunately, the value of uni-lateral or one-side lighting is not yet well understood and appreciated. But scientific, practical demonstration proves beyond a doubt that uni-lateral lighting gives the best results in rooms when the pupil seated farthest from the window is not distant more than twice the height of the top of the window from the floor. The window sill should be from $3\frac{1}{2}$ to 4 feet above the floor and the top of the window should reach as near to the ceiling as possible.

The light of the room is largely modified by the amount of blackboard space and the color of the walls. Blackboards absorb much of the light and on dark days affect, very materially, lighting conditions. The glaring white walls found in so many school rooms are equally bad in their effect upon the pupils' eyes. The most satisfactory suggestions relating to the tinting of the walls come from a report made to the school board of New York City by a committee of the best-known oculists of the city. According to this report, the lower portions of the room should be a light brown. The walls should be a light buff tint or a light gray and the ceiling should be of ivory white. The effect of this combination of tints is very restful and cheerful. Green, which was formerly supposed to be a good school room color for shades and tinting, is shown by experiment and demonstration to be a very troublesome one. Light-colored wood should be selected for the furniture and furnishings and the wood work should not be highly polished. Natural finish with a dull surface is best.

A PROPER PLAYGROUND.

A proper playground should be well drained; be easily accessible to pupils; fairly level; properly surfaced. A natural sanded surface seems to meet ordinary requirements. A sandy loam properly underdrained or a sand covered clay will be found to give good service as play surfaces. Cinders, gravel and broken stone offer many objections for surfacing purposes. Manufactured surfaces, such as brick, cement and asphalt, are too unyielding to be considered good for play purposes. Torpedo gravel and dust macadam make fairly satisfactory surfacing. Grass plots are highly desirable for play but they can only be maintained in the country where large spaces for school grounds are available. There are hundreds of school playgrounds in Pennsylvania that could be made more attractive and useful by the expenditure of a very little thought, time and money.

While the equipment is important, the space for free play is of greater importance. If ready made apparatus encumbers the ground, the opportunities for mass plays and spontaneous games are limited. Plays are of greater consequence than apparatus.

The amount of play space per pupil ought never to be less than 30 square feet. It will be observed that this provides small space for actual play, though it gives room for freedom of movement. A school ground that affords 100 square feet per pupil offers opportunities for free play and this should be the minimum. In rural communities there should never be less than one acre. It will be all the better if a larger area can be secured. Two acres, or even four acres, can be profitably utilized for baseball, tennis and croquet, and a portion of the area may be set apart for school gardens.

A proper playground needs to be properly supervised. If a special supervisor is not provided for the play periods, then provision must be made to have the teacher attend to these activities.

Public sentiment has been aroused in behalf of the movement in a very marked degree. In some of the cities independent organizations are furnishing the means for equipping and carrying on playground activities. Parents and teachers realize that clean, well kept, beautiful surroundings profoundly influence moral and intellectual growth.

SCHOOL HOUSE CONSTRUCTION.

Code Requirements.

The board of school directors of each district shall provide the necessary grounds and suitable school buildings to accommodate all the children between the ages of six and twenty-one years, in said district, who attend school. Such buildings shall be constructed, furnished, equipped and maintained in a proper manner as herein provided, suitable provisions being made for the heating, ventilating and sanitary conditions thereof, so that every pupil in any such building may have proper and healthful accommodations.

The code specifically points out that no new school building shall be contracted for, constructed, or reconstructed in any school district of the second, third, or fourth class *until their plans and specifications have been submitted to the State Board of Education and any recommendations concerning the same have been laid before the board of school directors.*

BUILDING REQUIREMENTS.

Floor Space, Air Space, Light.

All school buildings hereafter built or rebuilt shall comply with the following conditions:

In every school room the total light area must equal at least twenty per cent. of the floor space and the light shall not be admitted thereto from the front of seated pupils.

Every school room shall have not less than 15 square feet of floor space and *not less than 200 cubic feet of air space per pupil.*

Heat and Ventilation.

No board of school directors in this Commonwealth shall use a common heating stove for the purpose of heating any school room unless such stove is in part enclosed within a shield or jacket made of galvanized iron or other suitable material and of sufficient height and so placed as to protect all pupils while seated at their desks from direct rays of heat.

No school room or recitation room shall be used in any public school which is not provided with ample means of ventilation and whose windows, when they are the only means of ventilation, shall not admit of ready adjustment both at the top and bottom and which does not have some device to protect pupils from direct currents of cold air. Every school room shall be furnished with a thermometer.

Every school room hereafter erected or constructed, whose cost shall exceed \$4,000.00, or which is more than one story high, shall be so heated and ventilated that each school room and recitation room shall be supplied with fresh air at the rate of not less than 30 cubic feet per minute for each pupil and which air may be heated to an average temperature of 70 degrees Fahrenheit during zero weather.

Fire Protection.

All school buildings two or more stories high hereafter erected or leased in any school district of the first class shall be of fire-proof construction; and in any district of the second, third, or fourth class every building more than two stories high hereafter built or leased for school purposes shall be of fireproof construction.

All doors of entrance into any building more than one story high, used for a public school building in this Commonwealth, shall be made to open outward.

In all school buildings more than one story high, all entrance doors as well as all doors from class rooms, school rooms, cloak rooms, or other rooms into halls, shall open outward.

Every school building shall be provided with necessary fire escapes and safety appliances as required by law.

The board of school directors in each school district shall put the grounds about every school building in a neat, proper and sanitary condition and so maintain the same, and shall provide and maintain a proper number of shade trees.

Construction and Care of Toilets.

The board of school directors in every district shall, with every building used for school purposes, provide and maintain in a proper manner a suitable number of water closets or outhouses, not less than two for each building where both sexes are in attendance. Such water closets or outhouses shall be suitably constructed for, and used separately by, the sexes. When any water closets or outhouses are outside and detached from the school building, the entrances thereto shall be properly screened, and they shall, unless constructed at a remote distance from

each other, have separate means of access thereto, and, if possible, for not less than twenty-five feet from such water closets or outhouses, such means of access or walks leading thereto shall be separated by a closed partition, wall, or fence, not less than seven feet high.

The board of school directors shall keep all water closets or outhouses, used in connection with any school building, in a clean and sanitary condition, and shall, not less than ten days prior to the openings of any term of school, and oftener if necessary, have them properly cleaned and disinfected by the use of fresh dry-slacked lime, or other proper disinfecting material.

Social Uses of Grounds and Buildings.

The board of school directors of any district may permit the use of its school grounds and buildings for social, recreation, and other proper purposes, under such rules and regulations as the board may adopt.

Any board of school directors may make such arrangements as it may see proper with any association or individual for the temporary use of school property for schools, playgrounds, recreation, or other educational purposes.

Condemnation of Buildings.

The State Superintendent shall have power to condemn as unfit for use, or on account of unsanitary or other improper conditions, any school building, school site, or outbuilding, in this Commonwealth, and upon failure of the board of school directors to remedy such conditions, he shall have power to withhold or declare forfeited all or any part of the annual appropriation apportioned to any such school district.

Standard Plans for Buildings

The State Board of Education has available for distribution standard plans of one, two, three and four-room buildings which embody the latest and best thought in school house construction. In planning these the architect has kept in mind the requirements of the code, namely: sufficient light, floor space, air space, and proper heat and ventilation; vestibules and cloak rooms have been provided and wall spaces are available for plenty of blackboard surface. Suggestions relative to tinting the walls and ceiling and the painting of the woodwork are indicated in the specifications.

If requisition is made upon the State Board of Education for any of these plans, blue prints covering the detailed drawings for building will be forwarded. If the proposed building is erected in accordance with the plans furnished, the board may proceed without further approval. In case the plans are used as a basis upon which other plans are formulated, then such changed plans together with the changed specifications shall be submitted in duplicate to the State Board of Education before contract is awarded.

Plans for Large Buildings.

It is clearly impossible for the State Board of Education to furnish detailed plans and specifications for buildings beyond a four-room capacity. To do so would require a force of architects that could not be maintained within the limits of the ordinary appropriation made to the State Board of Education. Moreover, standard plans of the larger buildings rarely, if ever, fit the conditions peculiar to a particular locality and environment. To get the most satisfactory plan, the architect must study the site in relation to the surrounding buildings and must know definitely what special features are to be incorporated in the plans. Furthermore, the architect

employed under these circumstances is expected to make frequent inspections while the work of construction is in progress to see that the terms of the contract are fully complied with.

After the architect has been selected, it is advisable to submit the preliminary sketches to the State Board of Education so that if any changes are recommended they can be incorporated in the finished prints and specifications. The law specifically states *that no contract shall be awarded until the plans and specifications have been submitted to the State Board of Education and any recommendations concerning the same by the State Board of Education have been laid before the board of school directors.*

Building Hints.

The best lighting is secured when windows are placed on the left of the seated pupils or on the left and rear. Lighting on opposite sides of the room results in cross lighting and uneven distribution which is injurious to the eyes. As the best light comes from above, the windows should reach as near to the ceiling as the safety of the structure will permit.

The window shades should be neutral gray in color, large enough so that rays of light cannot enter at the sides, and two shades to each window fastened in the center of the sash. By such an arrangement the shades can be pulled either up or down and light admitted from above or below.

Floors should be double—especially in rural schools. This will prevent pupils from having cold feet and will be a means of saving heat. Building paper or felt should be placed between the floors.

Wall space should be conserved so as to provide plenty of blackboard surface.

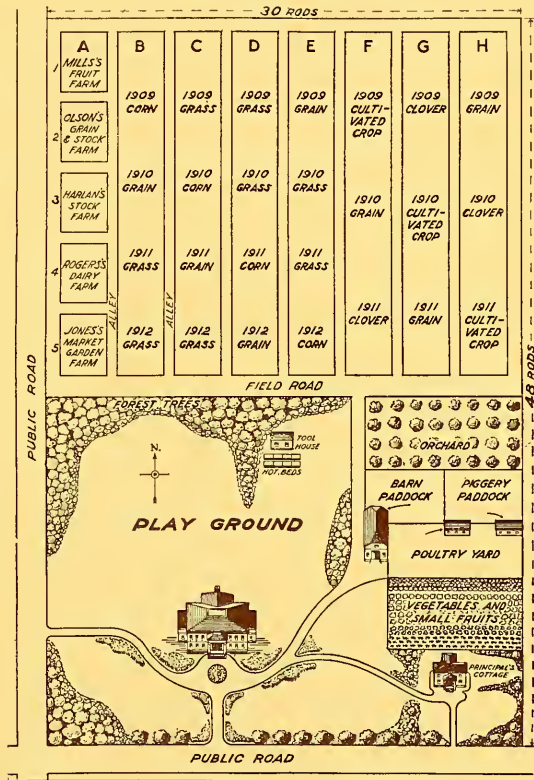
The color scheme for interiors should receive careful thought and attention. Pupils are profoundly affected by colors. The sides should be neutral gray or light buff. Glaring white walls are a positive injury to sight, and colors having an excess of blue or green make the room cold and cheerless. An ivory white ceiling makes a good reflecting surface.

Plans submitted to the State Board of Education for approval should show definite measurements and details—floor areas, story heights, lighting area, heating and ventilating, exact location of stairways, cloak rooms, etc.

The following suggestive one, two, three and four-room plans are for the use of boards of school directors. If requisition is made upon the State Board of Education for any one of these plans, blue prints covering the detailed drawings for building will be forwarded. If the proposed building is erected in accordance with the plans furnished, boards may proceed without further approval.

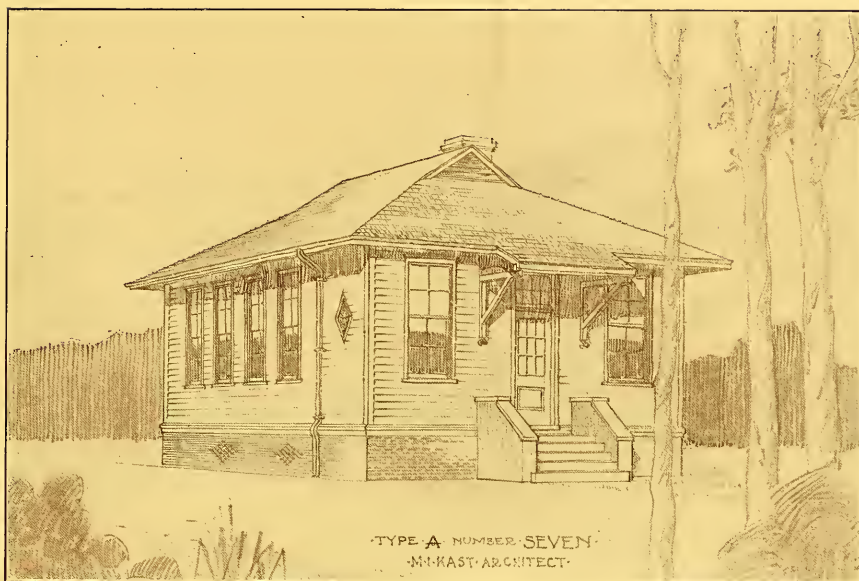
In case the plans are used as a basis upon which other plans are formulated, then such changed plans together with the changed specifications shall be submitted in duplicate to the State Board of Education before contract is awarded. Floor plans and elevations may be varied to suit local needs. It is believed that the following designs combine the maximum of comfort, convenience, economy and attractiveness.

THE COUNTRY SCHOOL PLANT OF THE FUTURE.

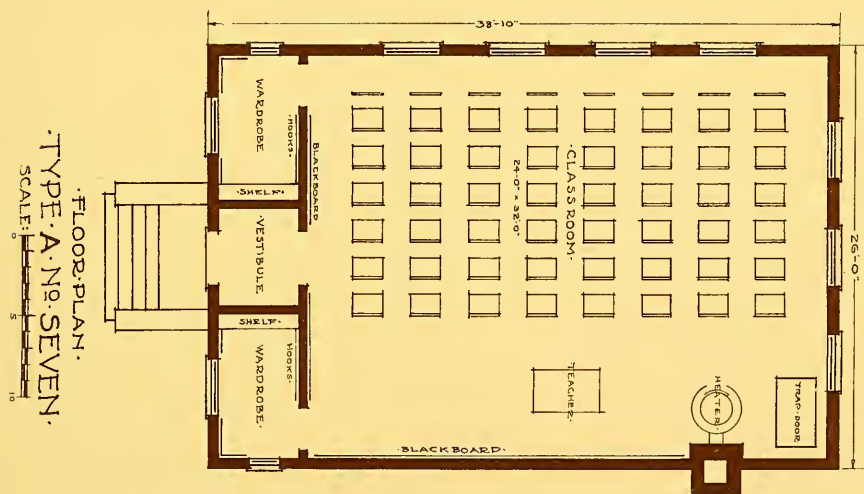


Such a school plant will furnish opportunities for training boys and girls in real life activities. It will create a good social and industrial atmosphere and promote appreciation of country life.

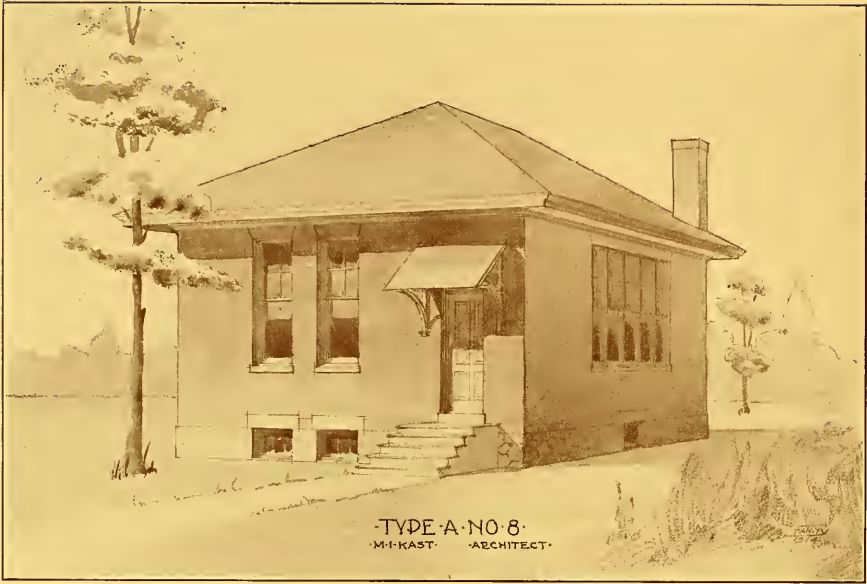
STANDARD ONE ROOM PLANS



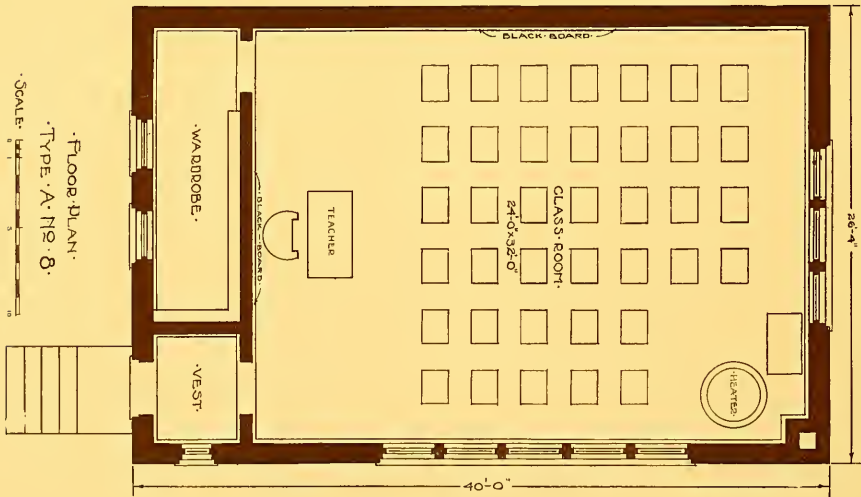
TYPE A. No. 7.



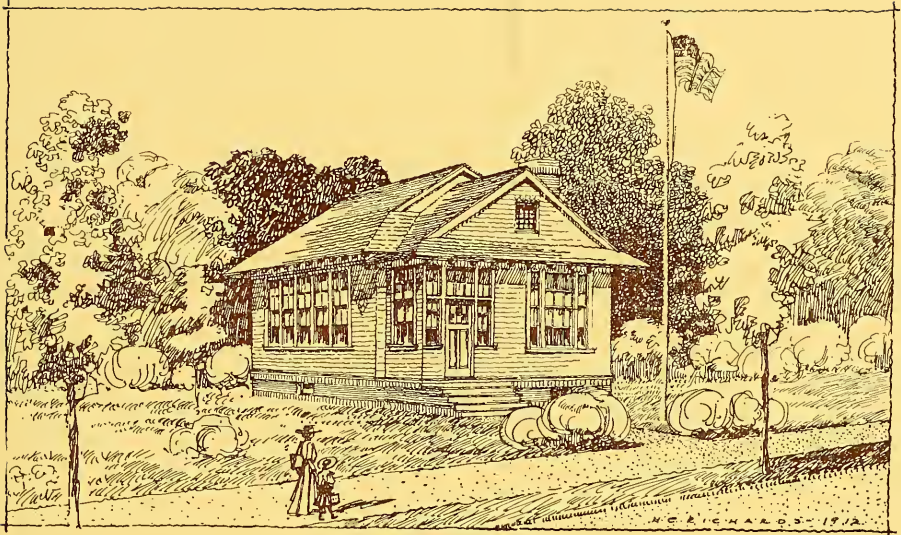
TYPE A. No. 7.



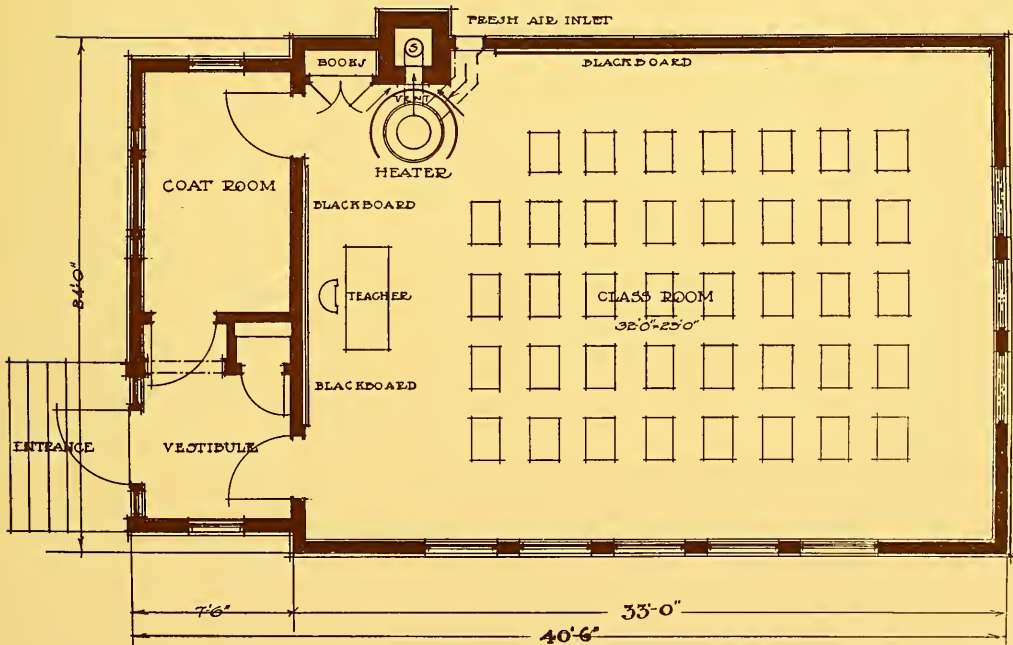
TYPE A. No. 8.



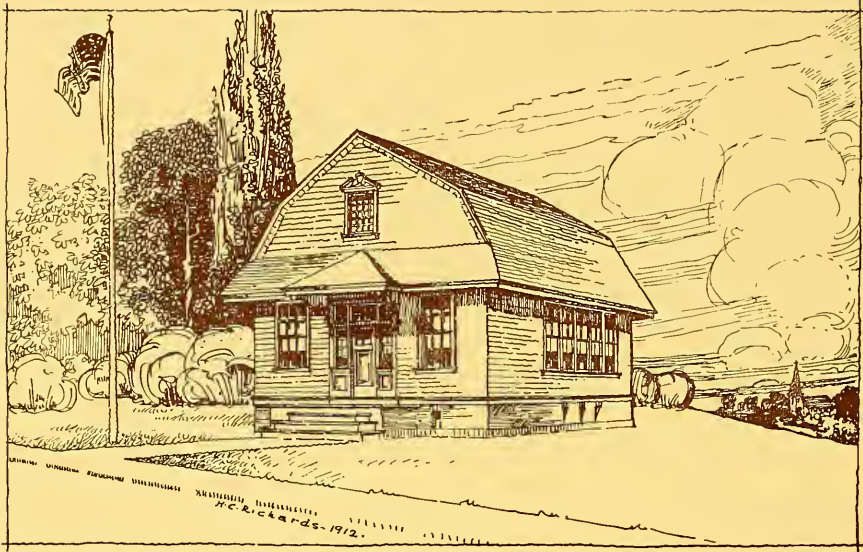
TYPE A. No. 8.



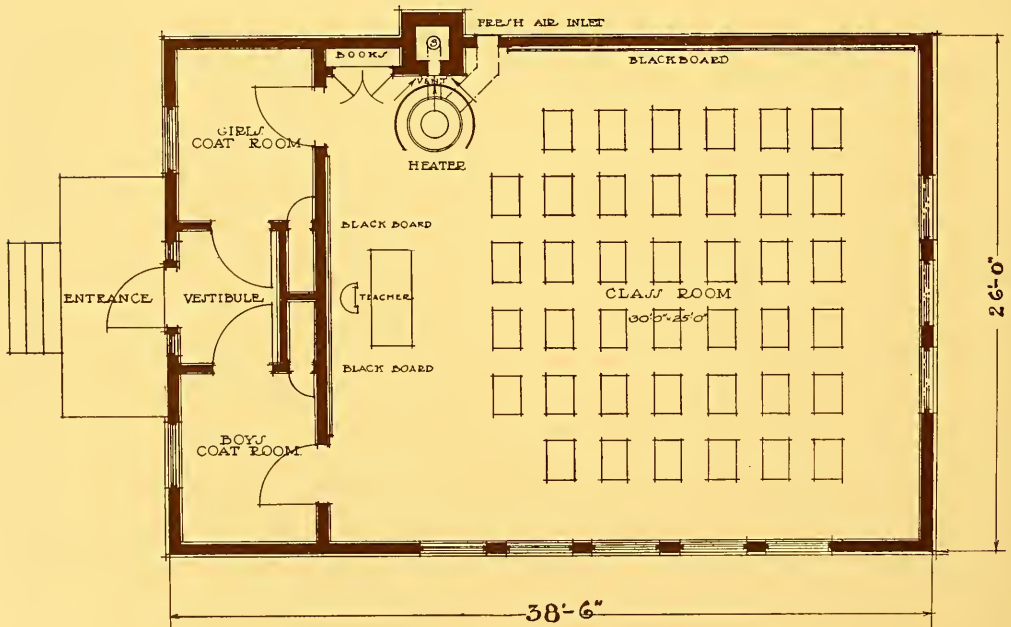
TYPE A. No. 1.



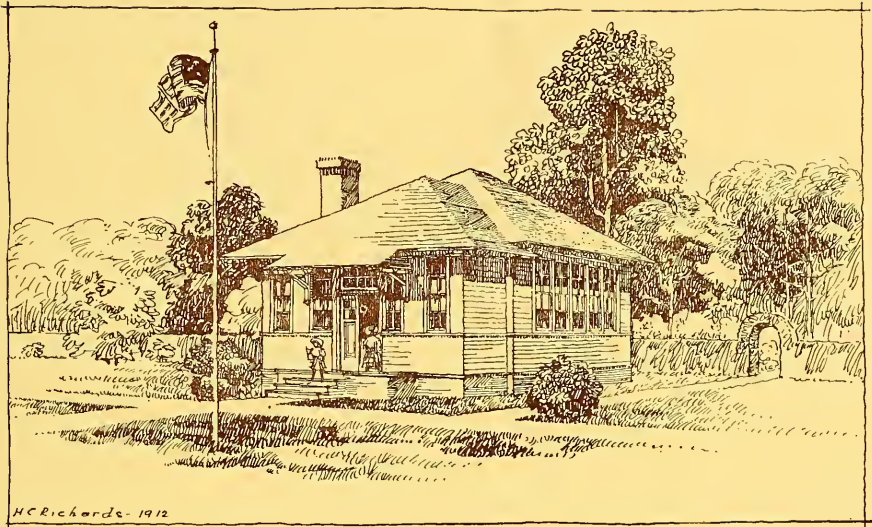
TYPE A. No. 1.



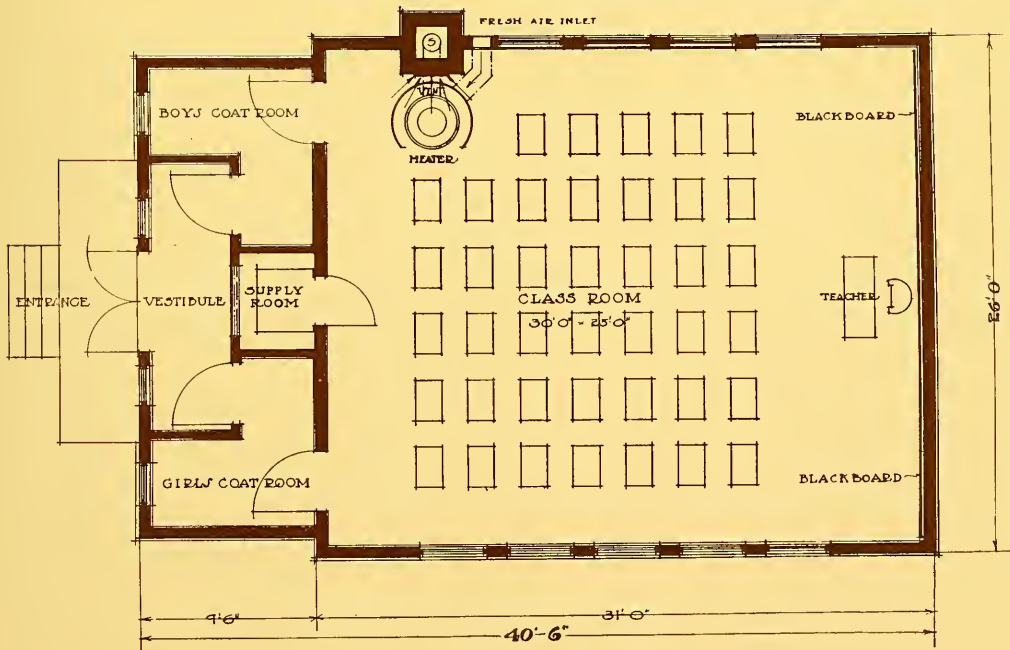
TYPE A. No. 2.



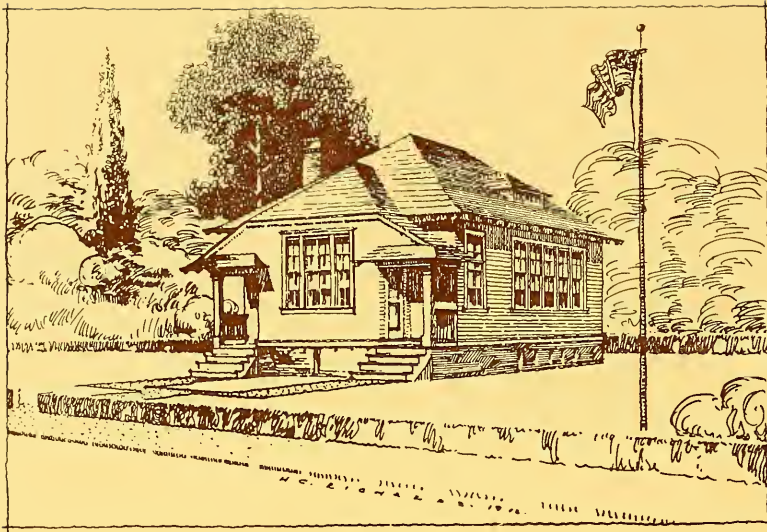
TYPE A. No. 2.



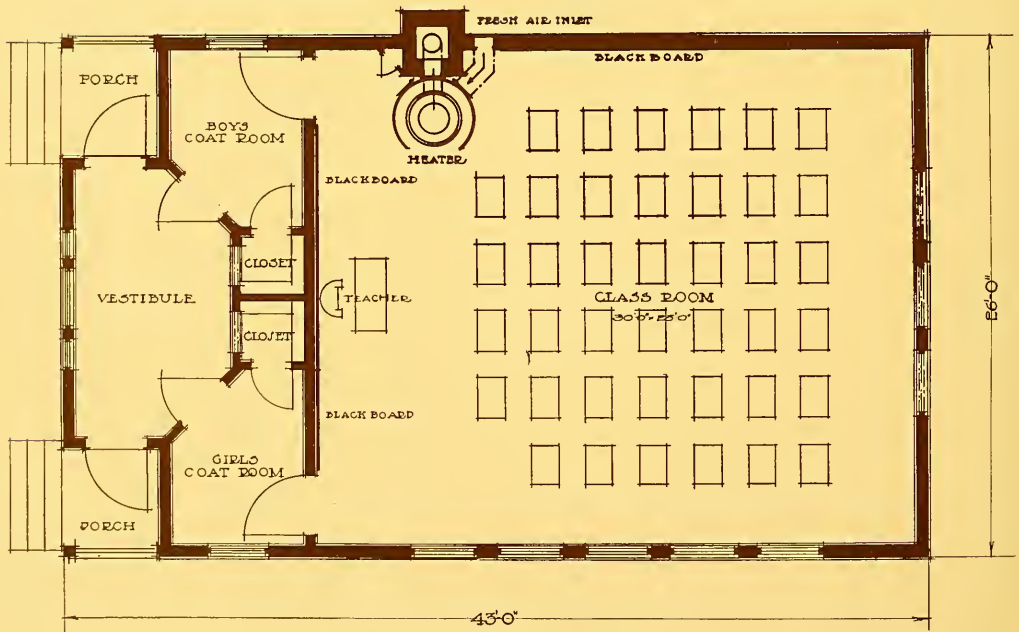
TYPE A. No. 3.



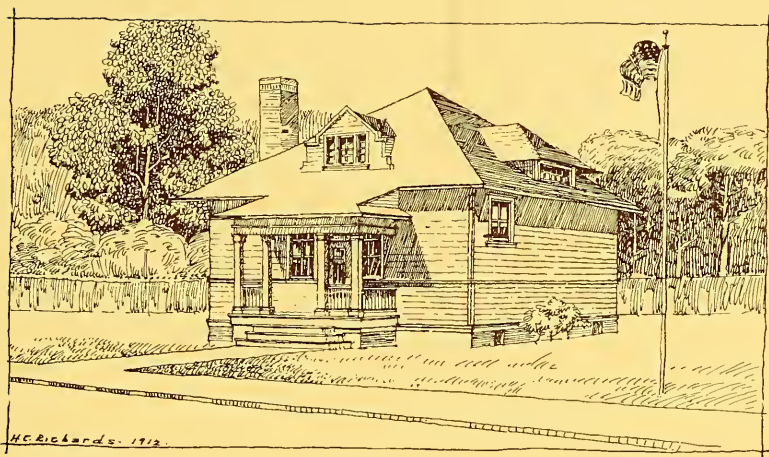
TYPE A. No. 3.



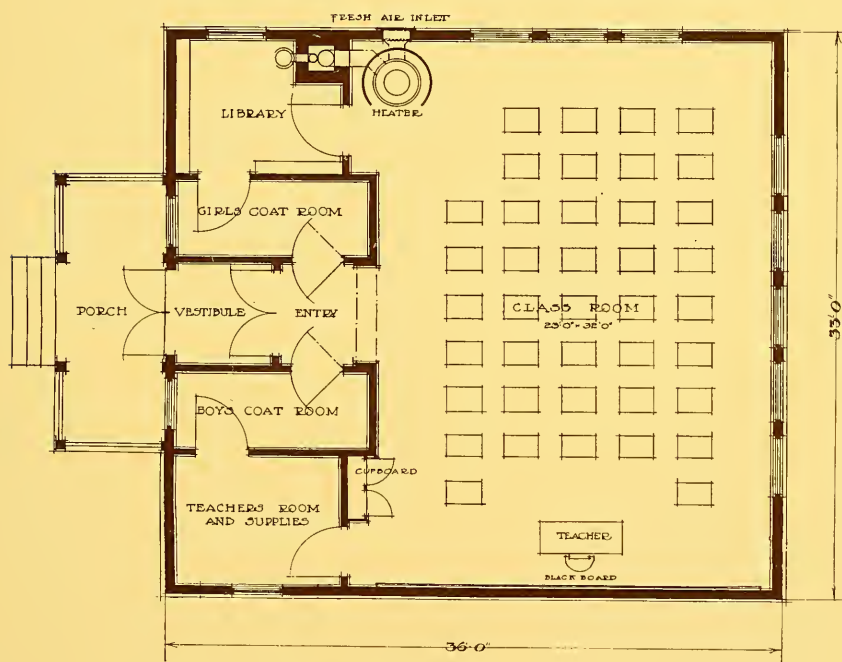
TYPE A. No. 4.



TYPE A. No. 4.



TYPE A. No. 5.



TYPE A. No. 5.



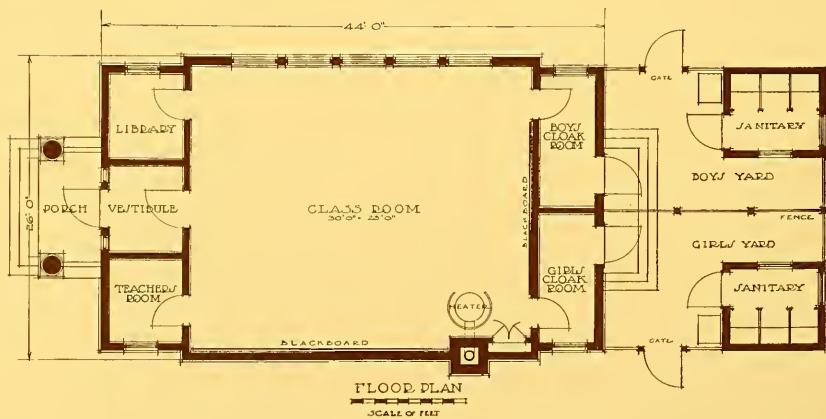
SIDE ELEVATION



REAR ELEVATION



FRONT ELEVATION



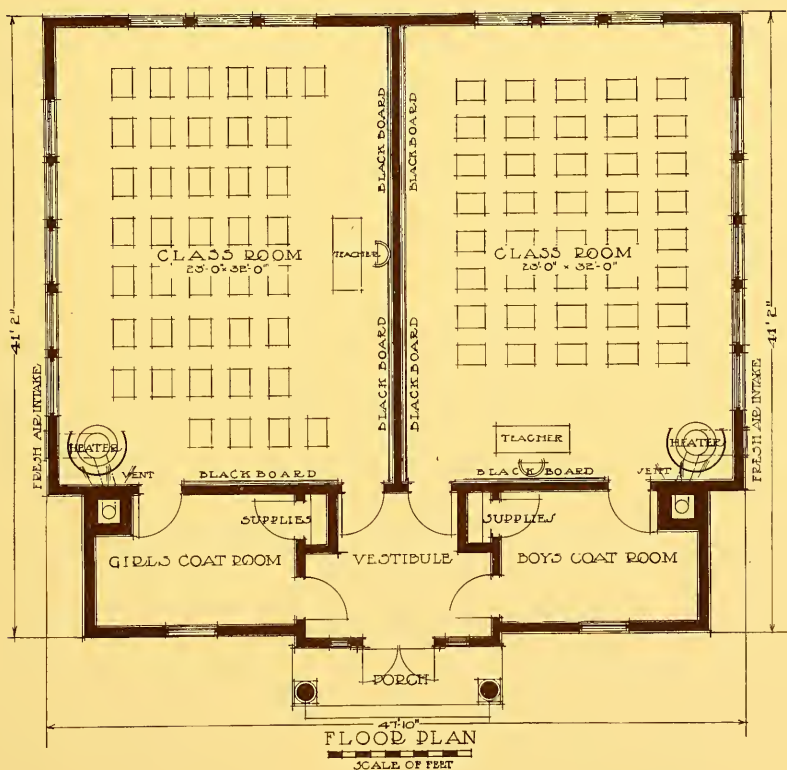
TYPE A. No. 6.

STANDARD TWO ROOM PLANS



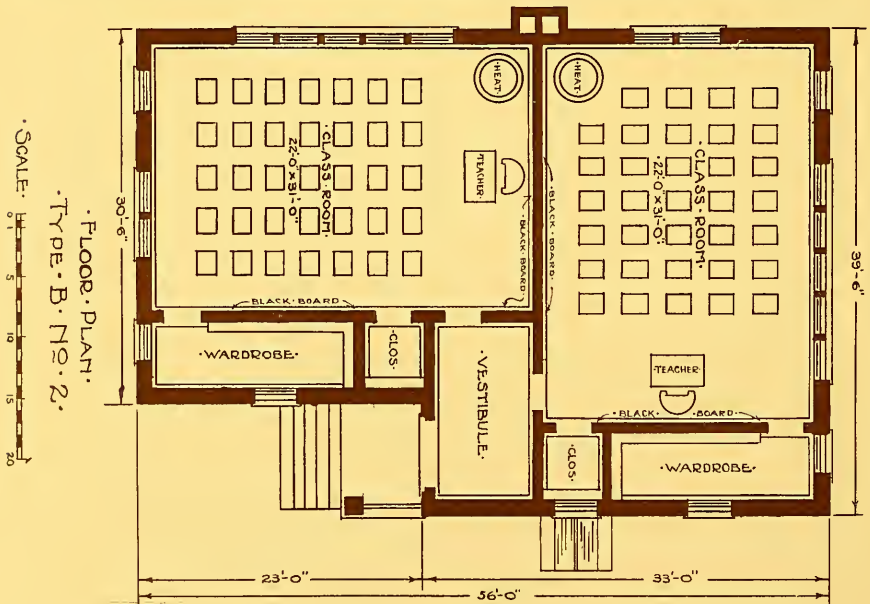
FRONT ELEVATION

SCALE OF FEET





TYPE B. No. 2.

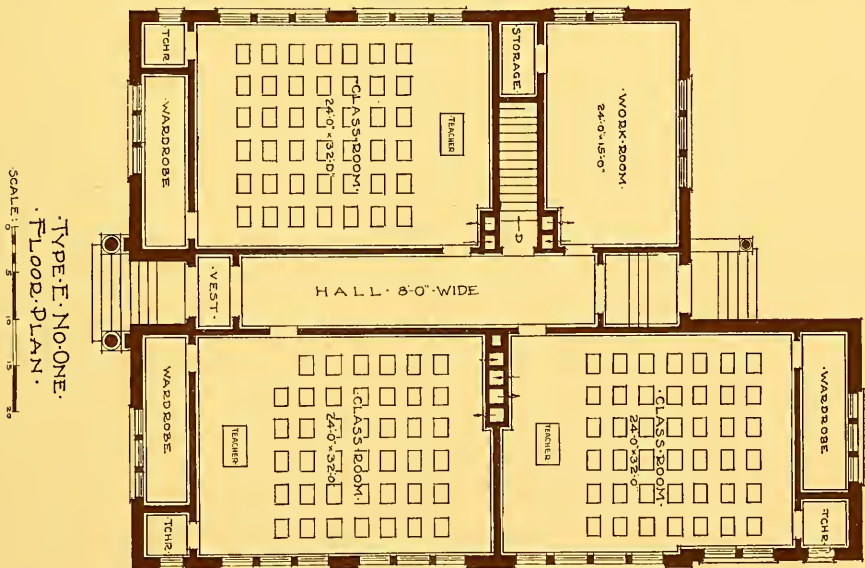


TYPE B. No. 2.

STANDARD THREE ROOM PLANS



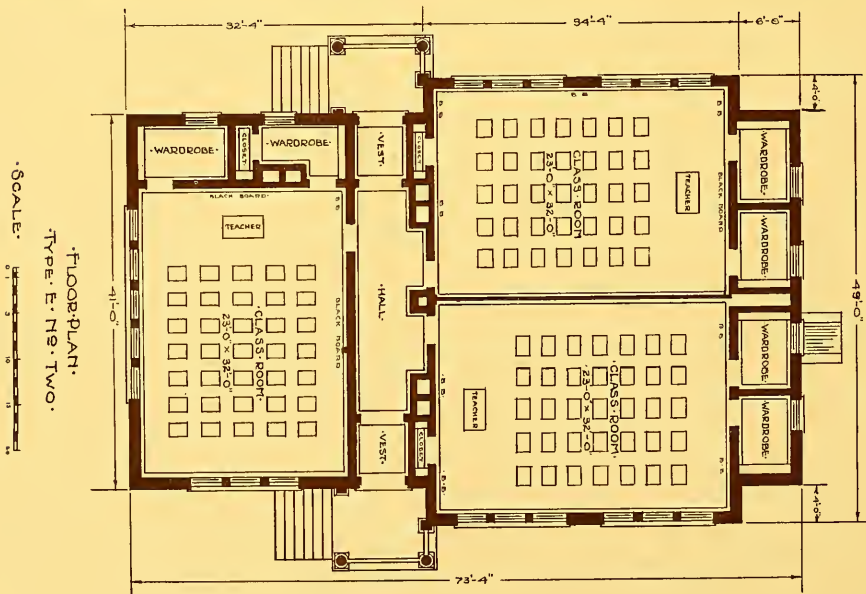
TYPE E. No. 1.



TYPE E. No. 1.



TYPE E. No. 2.



TYPE E. No. 2.

STANDARD FOUR ROOM PLANS



REAR ELEVATION



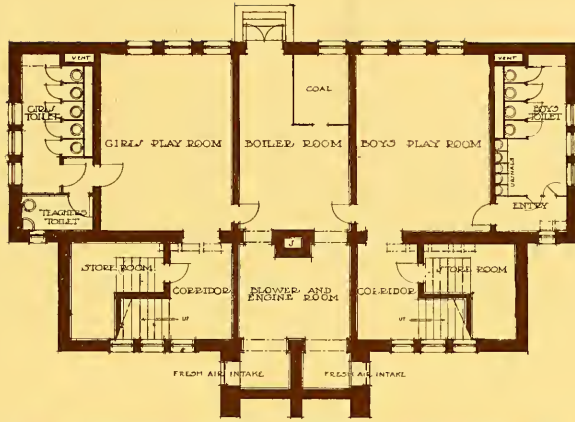
SIDE ELEVATION



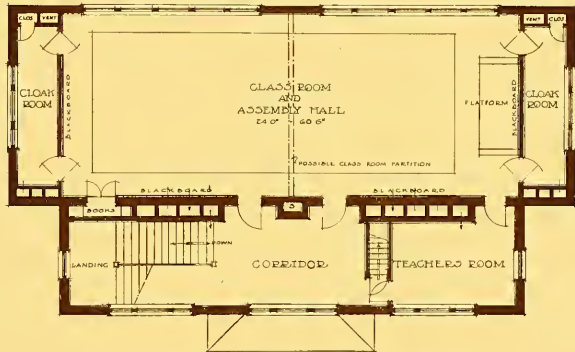
FRONT ELEVATION

SCALE OF FEET

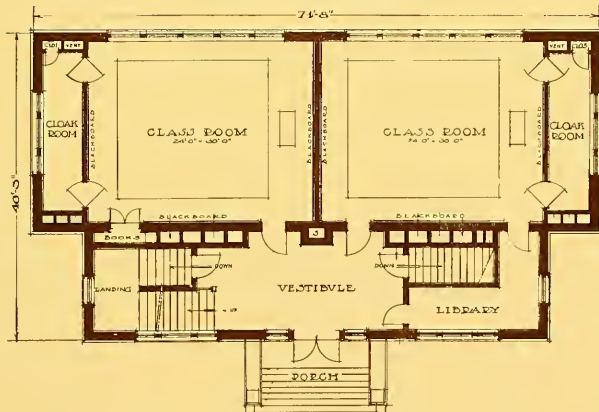
TYPE C. No. 1.



BASEMENT PLAN

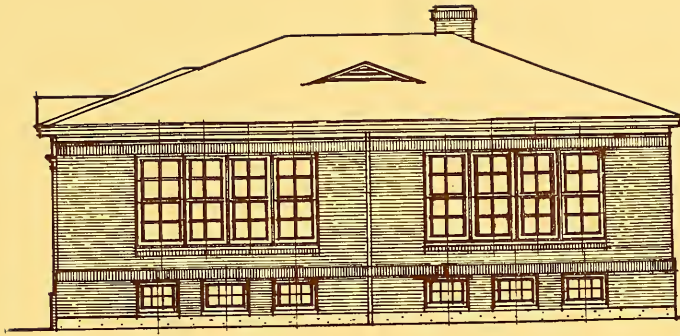


SECOND FLOOR PLAN

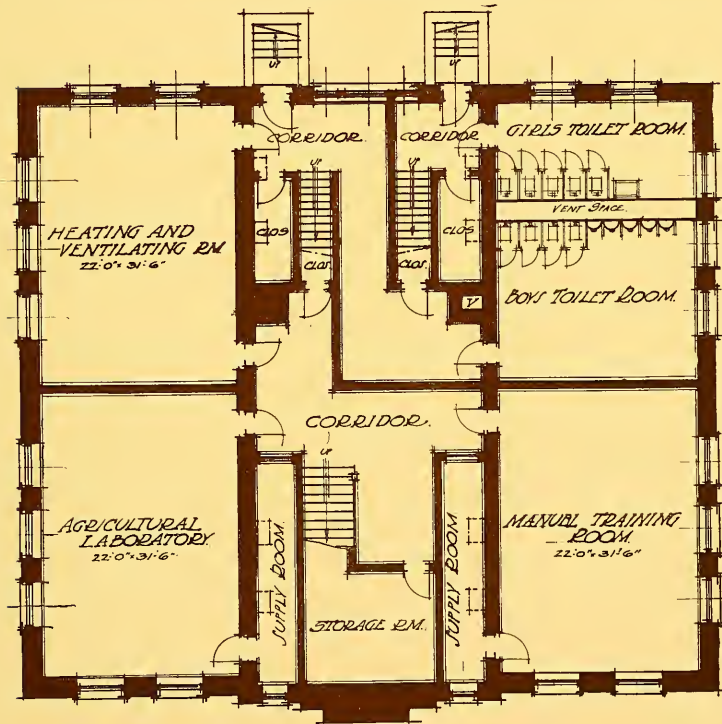


FIRST FLOOR PLAN

SCALE OF FEET



SIDE ELEVATION;



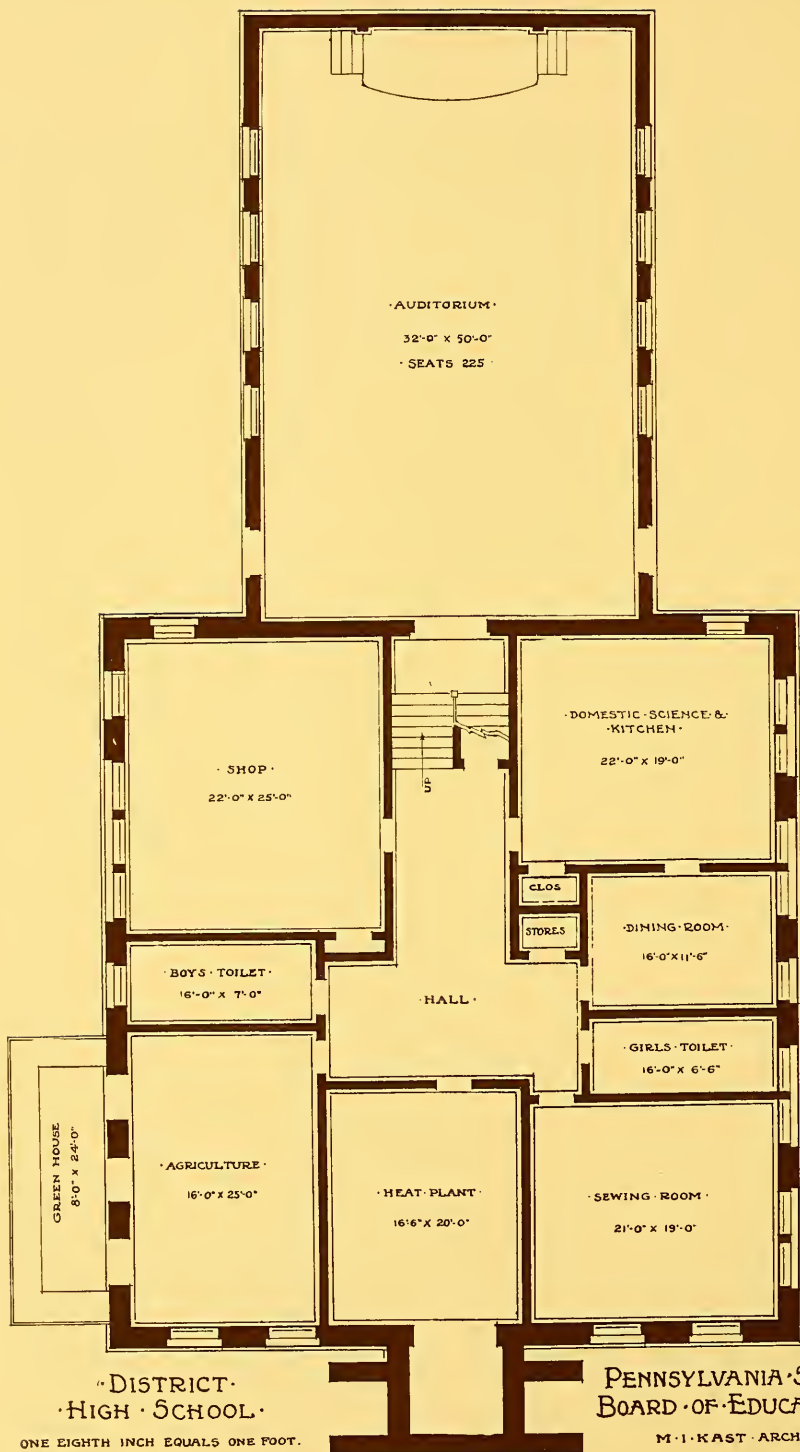
BASEMENT PLAN

Scale of feet

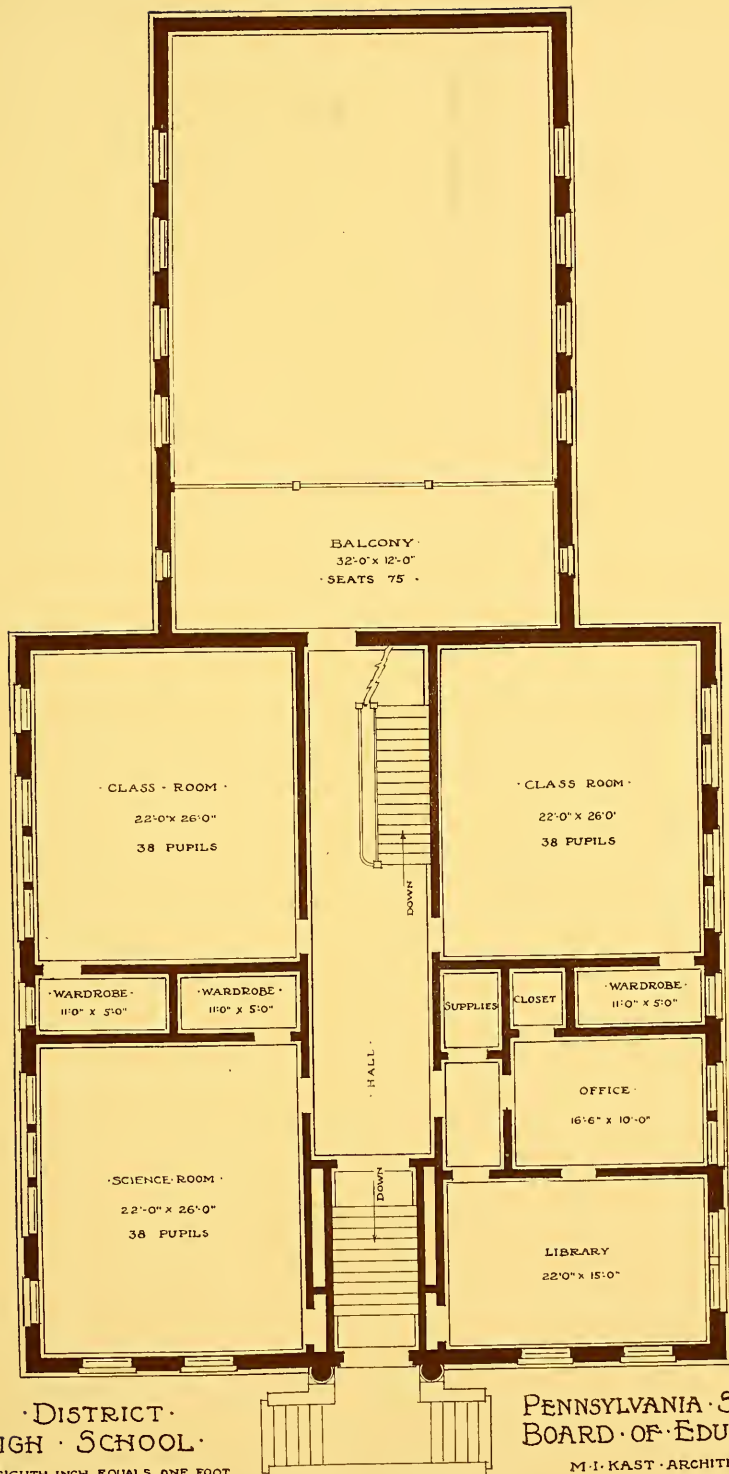
TYPE D, No. 1.

STANDARD PLAN FOR DISTRICT HIGH SCHOOL





BASEMENT PLAN



DISTRICT
HIGH SCHOOL
ONE EIGHTH INCH EQUALS ONE FOOT.

PENNSYLVANIA STATE
BOARD OF EDUCATION
M. I. KAST ARCHITECT

FIRST FLOOR PLAN

RURAL SCHOOL CONSOLIDATION



CONSOLIDATED SCHOOL, CHARLESTON, TIOGA CO., PA.



TRANSPORTATION OF PUPILS TO CONSOLIDATED SCHOOL AT CHARLESTON, TIOGA CO., PA.

A CONTRAST.



AS IT WAS.



AS IT IS.

One and two room schools built from plans furnished by the State Board of Education.



TYPE A. No. 3.
OVERLY'S SCHOOL, MOUNT PLEASANT TWP., WESTMORELAND CO., PA.



TYPE B. No. 1.
NICKTOWN SCHOOL, BARR TWP., CAMBERIA CO., PA.

SUGGESTIONS FOR THE EQUIPMENT OF RURAL SCHOOLS

SCHOOL ROOM EQUIPMENT

Every well equipped school room ought to have certain essential physical adjustments. The following list of articles, with probable price attached, may prove helpful to boards of school directors when considering the purchase of necessary fixtures:

40 single desks, ...	\$100 00
5 rear seats for desks, ...	8 50
Teacher's desk and chair, ...	10 50
1 eight-inch globe, ...	2 25
6 wall maps, ...	7 50
1 wall clock, ...	2 50
1 primary reading chart, ...	5 00
12 folding chairs, ...	7 50
3 tables for various uses, ...	4 50
Window shades (two for each window), ...	16 00
12 blackboard erasers, ...	2 00
Half gross coat and hat hooks for cloak rooms, ...	7 50
Thermometer, ...	50
State and U. S. flag, ...	2 50
Hygrometer, ...	1 35
Total, ...	\$178 10

A PRACTICAL DEMONSTRATION.



Sample Group of Eighth Grade Pupils.

Demonstrating the absolute necessity of having adjustable desks in *every* school room—
and especially in *ungraded school rooms*.



Courtesy of the Columbia School Supply Co., Indianapolis, Ind.



Improved "Trenton" Combination Adjustable Desk.



"Desk Chair."



"Mercer" Adjustable Desk and Chair.

Courtesy of New Jersey School-Chair Co., Trenton, N. J.

Horizontal Adjustment of Top at will of occupant.
Adapted to varying uses.
The only scientific and practical Plus and Minus
adjustment.
Top has horizontal adjustment of $3\frac{1}{2}$ inches.

Inkwell exposed when top
withdrawn for writing;
covered and protected when
top returned for study.



Vertical
adjustment of
Back Support
 $2\frac{1}{8}$ inches.

Not adjusted by occupant.
Affords proper support to back
and correct position.

Vertical ad-
justment of
Desk Box

No. 1. $32\frac{1}{4}$ " to $26\frac{5}{8}$ "
No. 3. $27\frac{5}{8}$ " to $22\frac{7}{8}$ "
No. 5. $24\frac{1}{4}$ " to $19\frac{1}{16}$ "

Not adjusted
by occupant

Vertical adjust-
ment of Chair
Seat

Top of seat from
floor:
No. 1. $18\frac{1}{2}$ " to 15 "
No. 3. 16 " to $12\frac{1}{2}$ "
No. 5. $13\frac{1}{2}$ " to 11 "
Not adjusted by
occupant.

AMERICAN STEEL ADJUSTABLE BOX DESK WITH SLIDING TOP

CHAIR EQUIPPED WITH ADJUSTABLE BACK SUPPORT

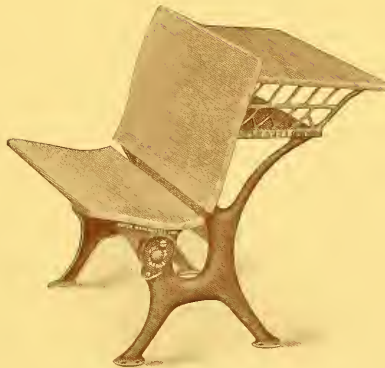
Courtesy of The American Seating Co., Chicago, Ill.



MODEL B.
Moulthrop Movable and Adjustable School Chair.
*Courtesy of Langslow, Fowler Co.,
Rochester, New York.*

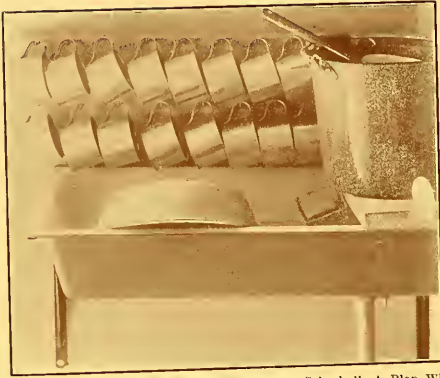


*Courtesy of the Columbia School Supply
Co., Indianapolis.*



*Courtesy of The Peabody School Furniture Co.,
North Manchester, Indiana.*

TYPES OF INDIVIDUAL DRINKING CUPS AND FOUNTAINS.



Courtesy O. J. Kern, author of "Among Country Schools." A Plan Which Can be Used by Any Teacher.



Courtesy of the Dail Steel Products Co., Lansing, Mich.



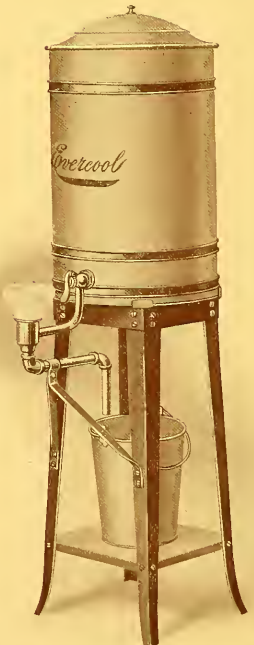
From "School Sanitation and Decoration" D. C. Heath & Company, Publishers.



Courtesy of the Smith System Heating Co., Minneapolis, Minn.



Courtesy of the Waterman-Waterbury Co., Minneapolis, Minn.



Courtesy of the Hart Mfg. Co., Grand Rapids, Wisconsin.

VENTILATION.

Suggestions for Window Ventilation.

1. Air in the school room should be changed several times per hour.
2. Before the sessions of school work begin and during intermissions every school room should be flushed with fresh air.
3. In ventilating it is as important to provide for the removal of foul air as for the introduction of pure air. Where natural means must be depended upon for ventilation, foul air flues or exhausts are absolutely essential.
4. The simplest method of window ventilation is to place a board four or six inches wide under the sash of the lower window. With the window thus raised, there is considerable space between the sashes at the middle through which fresh air comes. There will be a movement of the air, however, only in case there is enough difference in temperature to produce a draft.
5. The principle involved in the above method has been wrought out in various appliances. One arrangement shows a perforated board for the free entrance of air and to this at its lower edge another board is fastened at an angle so that the currents of air as they enter are deflected upwards. Another device takes the form of a box set under the window with perforations on the exposed side and top. The box rests on the sill and extends inside far enough to allow the fresh air to pass upward through the perforations in the top.
7. Where steam or hot water heaters are used to heat the room directly, one method of ventilation is to have openings through the wall just behind the radiator. The front and ends of the radiator may be enclosed, thus the cold air entering passes around and through the radiator sections and is warmed as it enters. In most of these devices the supply of air may be controlled by a regulating slide. Fine wire is used to cover the openings and thus snow and rain are kept out; furthermore, the heavy currents of air are broken and drafts avoided.

Some of these appliances are of metal instead of wood but the principle involved in all of them is the same.

Ventilation for a One-room School.

(Adapted from "Air, Efficiency and Health" by W. E. Watt.)

Put a tin pan or basin filled with water on the stove or furnace where the steam arising from it will mix with the air of the room. Keep it supplied with water all day. It should be filled before the fire is started in the morning and should be left full at night.

Hang a thermometer about as high as the heads of the sitting pupils. It should not be against a cold wall, but suspended from the ceiling by a string where direct heat or draft cannot reach it. Perhaps in front of the teacher's desk is the best place, if you can put a guard about it to prevent its being thrown down.

The proper temperature without humidity must be 70 degrees or more; but with boiling water on the heater about 60 degrees will be found comfortable.

There must be some air in the room which has not been in contact with the heating apparatus. Open one or more windows at the top—none at the bottom, in cold weather. This should be done before the work of school begins in the morning, and the openings should be preserved all day, but varied with changes in the weather. When severely cold, very little will answer. When the wind blows against the window a small opening is enough. But on a still day, or when the weather is mild, the windows may be dropped two feet or more each, on one side of the room. Do not wait for the air to get foul before ventilating. Have the air good at the start and keep it good all the time.

Avoid letting the lower part of the room get cold by a sudden inrush of outdoor air in large quantities. It is dangerous for the child to sit partly submerged in cold air while his head is in a warm stratum.

Look out for pupils who have played at recess or run fast to school and are covered with perspiration and somewhat tired. Some gentle exercise should be given them until they are cooled rather than permitting them to sit in a cold place without action on a cold day. Instruct all to acquire the habit of caring for themselves. An extra wrap or gentle exercise is a wise precaution.

When outer doors are in use, close the windows. Do not permit a cold layer of air to fall to the floor while the upper air is warm. In case of a mistake like this, close all windows and doors and stir up the fire for a while, giving the pupils something to do which will cause circulation to increase.

It is a good thing to let pupils know the new rules for ventilation and have the work actually done by some of the boys.

When the room is warm enough and fairly well filled with pupils, it is not wise to keep up a great fire and use the windows for cooling the room. The fire should be run at as low a state as practicable after the first heating of the room in the morning.

Air is right if it feels right. Trust your own feelings more than the readings of the thermometer. If you get enough steam into the air you will not be likely to care for too much heat. The danger is that the water on the stove may be neglected or that the floor may be flooded with cold air by opening a door or raising a bottom sash, or by having too wide an opening at the top.

When a room seems chilly, first see if there is too little humidity. A cold dry room may be made comfortable in less time by putting steam into it than by increasing the fire. The colder the day in winter the greater the need for moisture in the air.

Hygrometer.

The hygrometer, an instrument for measuring the different degrees of moisture in the atmosphere, should have a place in every school room along with the thermometer. Air at a temperature of 68° should show from 40% to 60% saturation. One can work comfortably in such an atmosphere.

HEATING AND VENTILATING SYSTEMS.

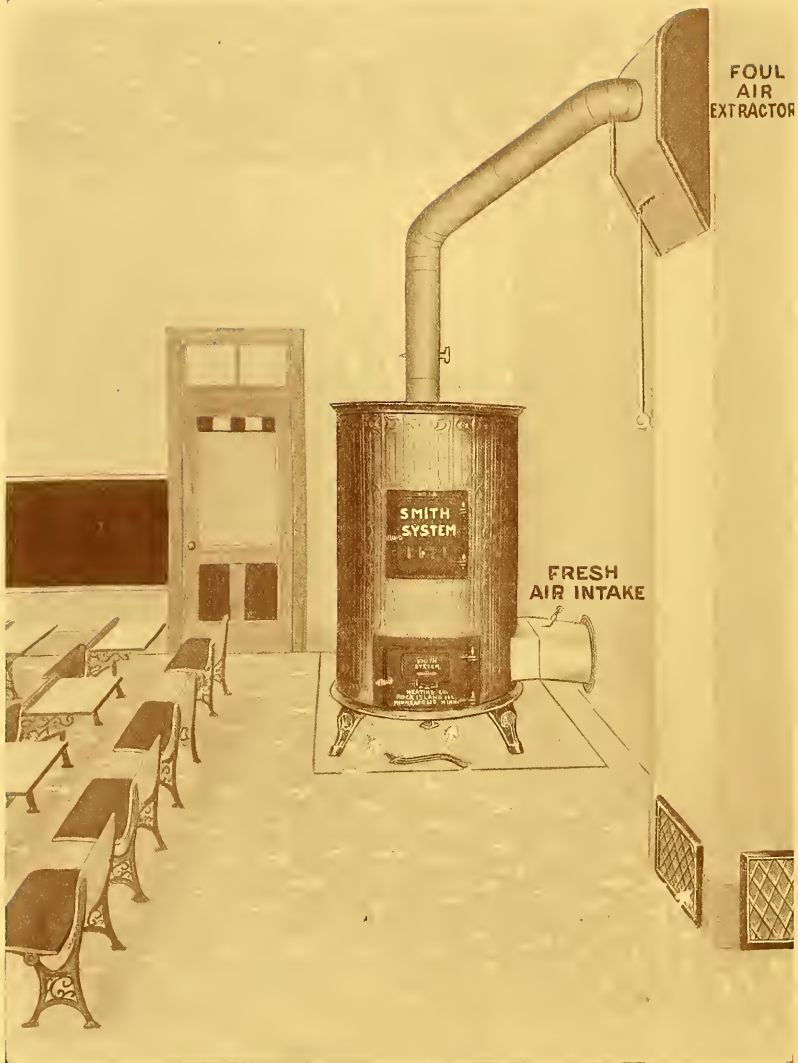
The State Board of Education cannot undertake to prescribe the definite and specific systems of heating and ventilating that may be employed for the various kinds of school buildings in this Commonwealth. It suggests that boards of directors in making contracts should be careful to have the specifications cover the code requirements. Whatever may be the system of heating installed, the specifications, before they can be approved by the State Board of Education, must contain a statement requiring the contractor to guarantee that the system of heating and ventilating described will heat the room to a temperature of 70 degrees Fahrenheit in zero weather and provide at least 30 cubic feet of fresh air per minute for each pupil to be accommodated.

On the following pages are cuts showing a number of typical modern systems embodying the generally approved principles of heating and ventilating.



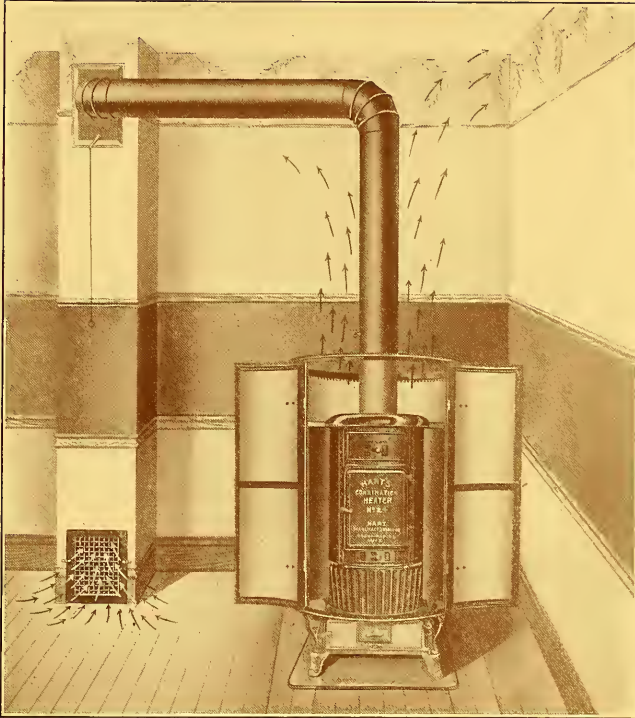
THE WATERBURY SYSTEM—STYLE C.

Courtesy of the Waterman-Waterbury Co., Minneapolis, Minn.

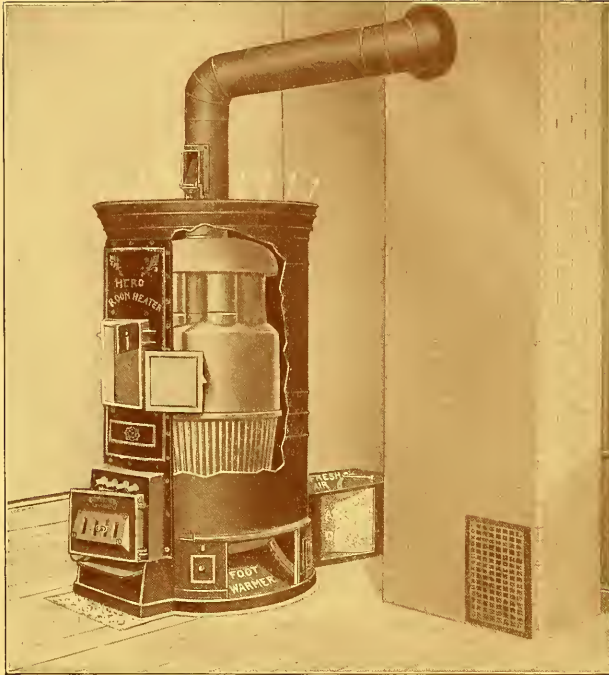


THE SMITH SYSTEM SANITARY FURNACE.

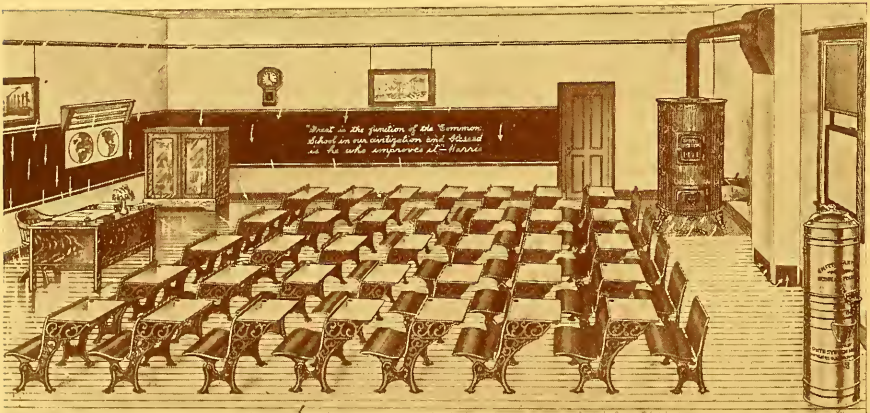
Used when the chimney extends to the floor. The fresh air intake regularly is placed on the back of the furnace. *Courtesy of the Smith System Heating Co., Minneapolis, Minn.*



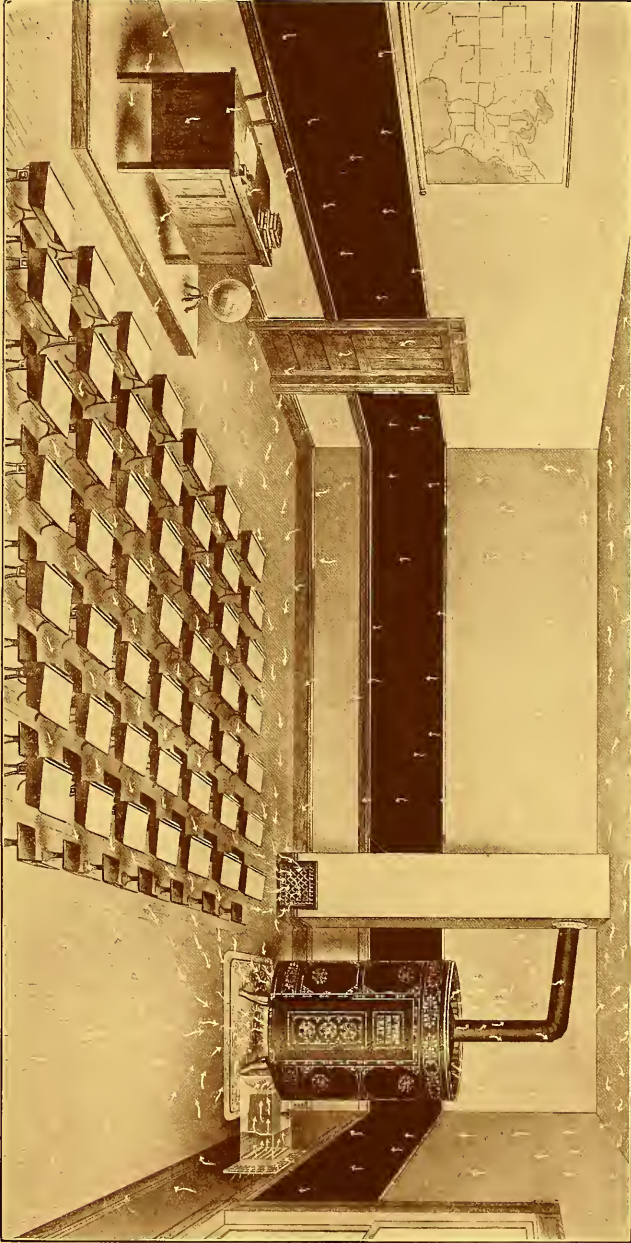
Courtesy of the Hart Manufacturing Co., Grand Rapids, Wisconsin.



A Hero Heater connected to double flue built from ground up. A permanent arrangement. Always good draft; always good ventilation. Courtesy of Charles Smith Company, 57 W. Lake St., Chicago, Ill.



Courtesy of the Smith System Heating Co., Minneapolis, Minn.



Buffalo Fresh Air Heater.
Courtesy of the P. L. Pease Co., Inc., Buffalo, N. Y.

SANITARIES.

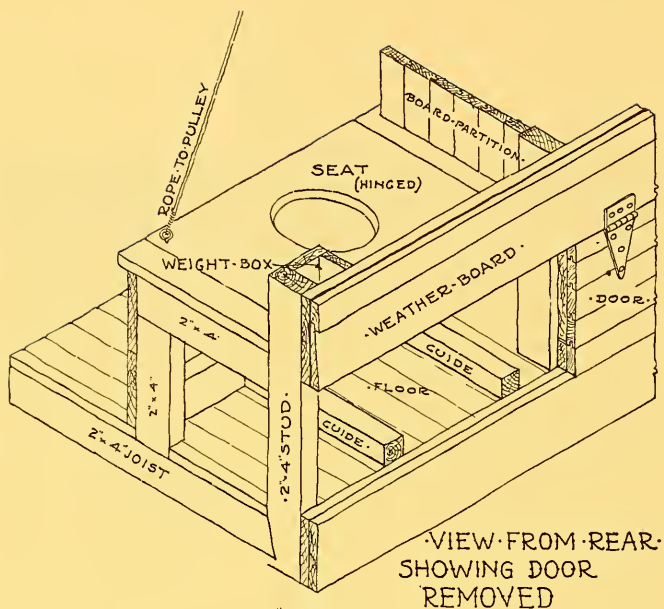
Special attention should be given to the construction and care of outside sanitariums. Many of the outbuildings now in use are thoroughly disgraceful and a menace to health and morals. Perhaps nowhere in the rural school equipment is a radical reform so much needed. A poorly built and badly kept outhouse is the most demoralizing agency connected with our schools. Where conditions require the use of outdoor toilets, they should be substantially built and the entrance properly screened. They should be kept absolutely clean and the waste disposed of in a proper manner. The excreta should either be removed from the vaults or covered with earth, lime, sawdust or ashes. The law specially enjoins upon school directors the duty of making provision for keeping the toilets in a clean and sanitary condition.

CHEMICAL CLOSET SYSTEMS.

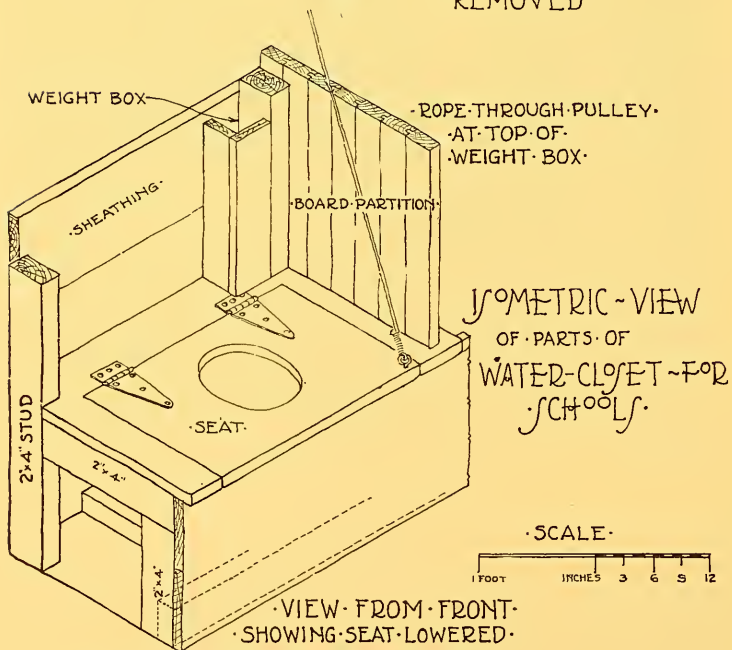
Chemical closet systems have been installed in some places. Should these prove to be entirely satisfactory, the question of providing proper sanitary toilets will be greatly simplified. The following cuts illustrate some of the systems that are being installed.



Sectional view showing interior of model outdoor sanitary. Note the operation of seat which is raised by rope and weight.
This sketch accompanies blue print details for construction furnished by the State Board of Education of Pennsylvania.



VIEW FROM REAR
SHOWING DOOR
REMOVED



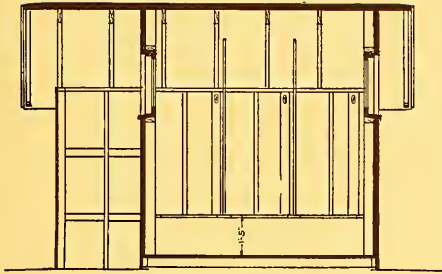
ISOMETRIC VIEW
OF PARTS OF
WATER-CLOSET FOR
SCHOOLS.

SCALE

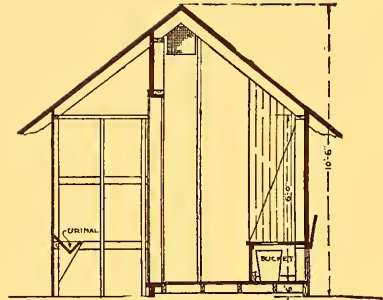


VIEW FROM FRONT
SHOWING SEAT LOWERED

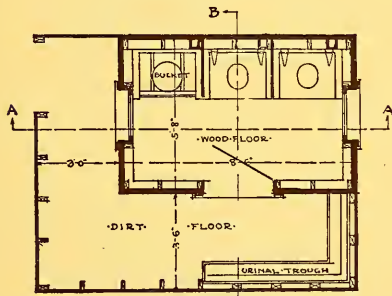
WHEN NOT IN USE THE SEAT IS
RAISED AUTOMATICALLY BY THE WEIGHT



SECTION ON "A-A"



SECTION ON "B-B"



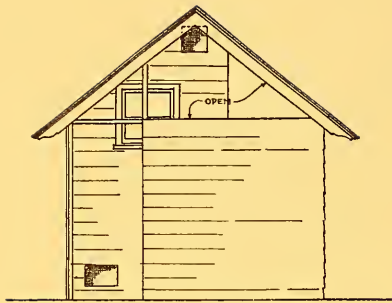
PLAN

PLAN SECTIONS & ELEVATIONS
OF A
WATER CLOSET FOR SCHOOLS

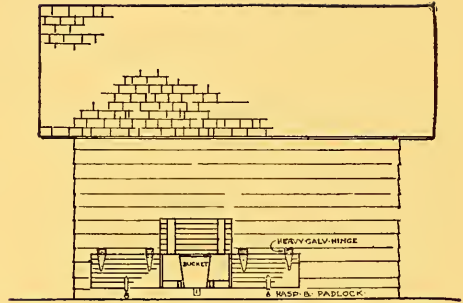
SCALE

FEET 3 2 1 0 6 12 INCHES

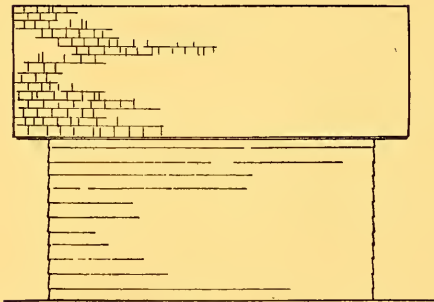
Blue Prints Furnished by the Pennsylvania State Board of Education.



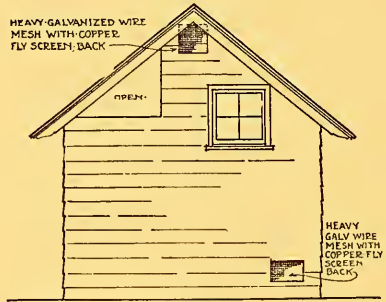
·END·ELEVATION·



·REAR·ELEVATION·

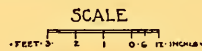


·FRONT·ELEVATION·

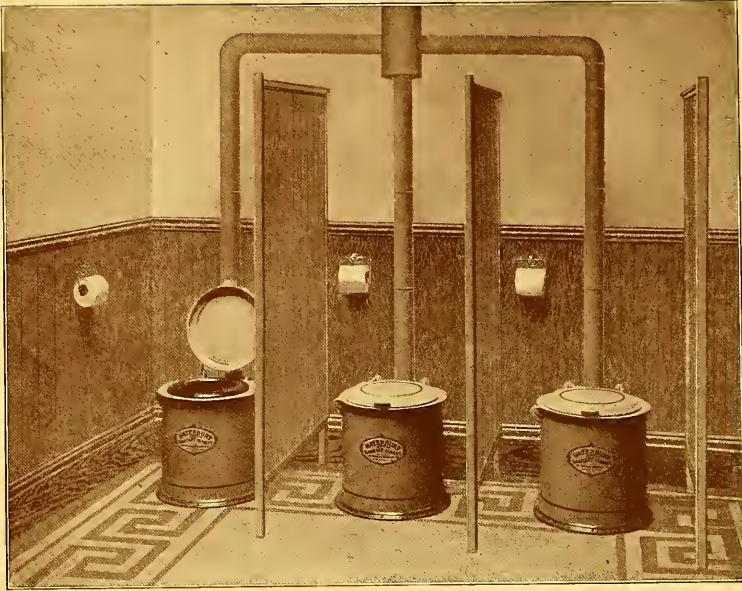


·END·ELEVATION·

·PLAN·SECTIONS·&·ELEVATIONS·
·OF·A·
·WATER·CLOSET·FOR·SCHOOLS·

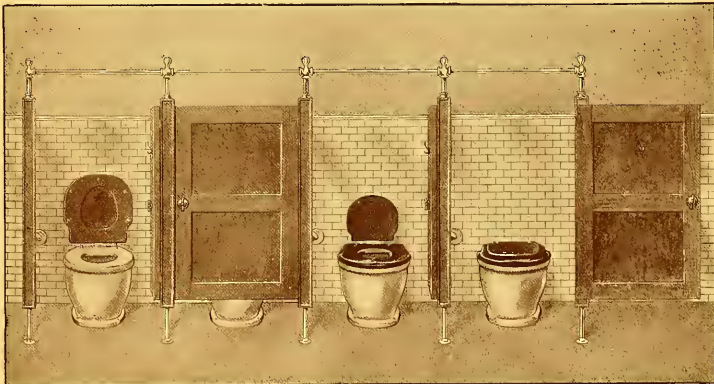


Blue Prints furnished by the Pennsylvania State Board of Education.

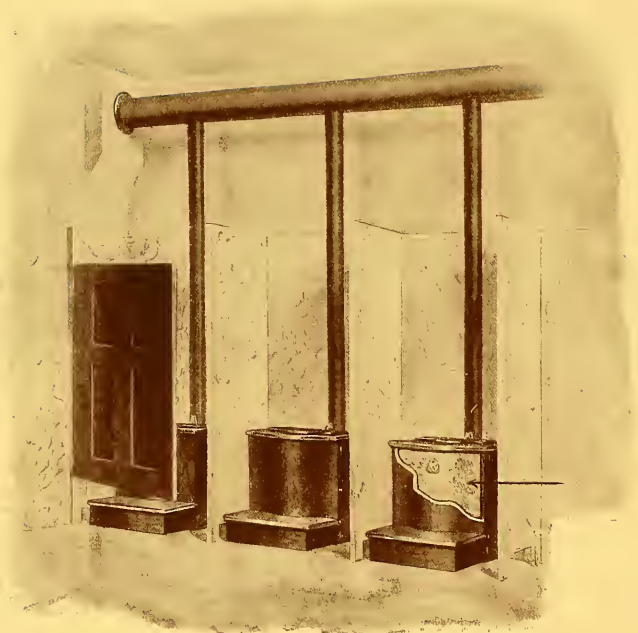


F.

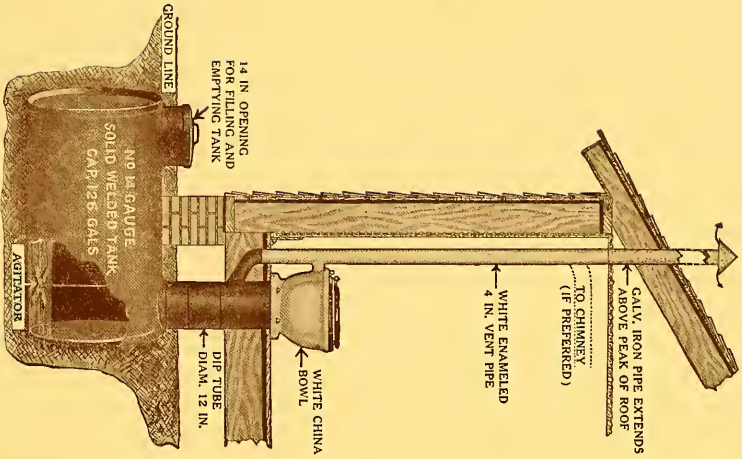
A battery of Waterbury Sanitary Closets installed in a school toilet room. Any vacant space, sufficiently private, in an old building may be sectioned off for the purpose.
Courtesy of the Waterman-Waterbury Company, Minneapolis, Minn.



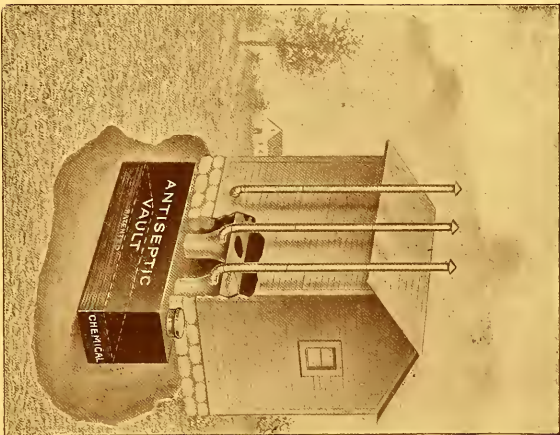
Courtesy of the Kaustine Company, Incorporated, Buffalo, N. Y.



Courtesy of the West Disinfecting Company, New York City, N. Y.



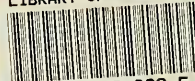
Courtesy of the Kaasine Company, Incorporated, Buffalo, N. Y.



Courtesy of the Kaasine Company, Incorporated, Buffalo, N. Y.



LIBRARY OF CONGRESS



0 029 452 362 5

